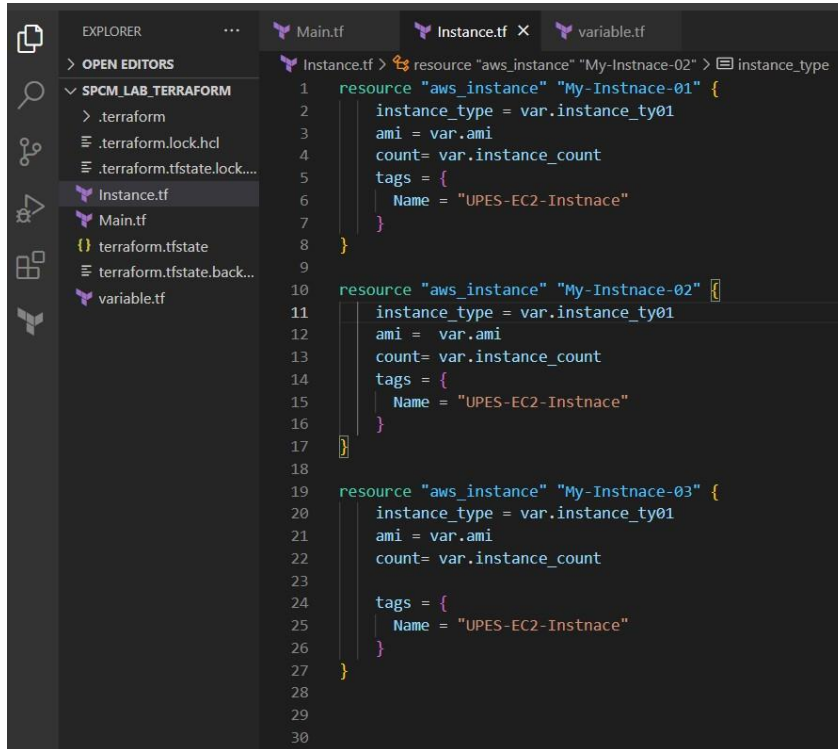


LAB EXERCISE 5

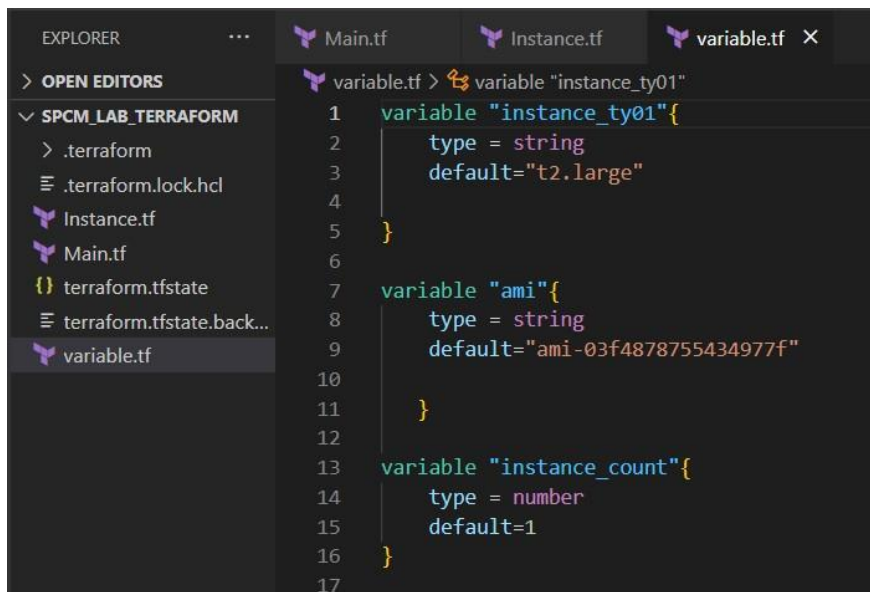
Aim: Terraform Variables with Command Line Arguments

Step 1: Create a instance.tf file:



```
1 resource "aws_instance" "My-Instnace-01" {
2     instance_type = var.instance_ty01
3     ami = var.ami
4     count= var.instance_count
5     tags = {
6         Name = "UPES-EC2-Instnace"
7     }
8 }
9
10 resource "aws_instance" "My-Instnace-02" {
11     instance_type = var.instance_ty01
12     ami = var.ami
13     count= var.instance_count
14     tags = {
15         Name = "UPES-EC2-Instnace"
16     }
17 }
18
19 resource "aws_instance" "My-Instnace-03" {
20     instance_type = var.instance_ty01
21     ami = var.ami
22     count= var.instance_count
23
24     tags = {
25         Name = "UPES-EC2-Instnace"
26     }
27 }
28
29
30
```

Step 2: Create a variable.tf file



```
1 variable "instance_ty01" {
2     type = string
3     default="t2.large"
4 }
5
6
7 variable "ami" {
8     type = string
9     default="ami-03f4878755434977f"
10 }
11
12
13 variable "instance_count" {
14     type = number
15     default=1
16 }
17
```

Step 3: Perform Terraform Validate And Apply

```

F:\SEM 6\SPCM_LAB\SPCM_LAB_TERRAFORM>terraform validate
Success! The configuration is valid.

F:\SEM 6\SPCM_LAB\SPCM_LAB_TERRAFORM>terraform apply
Acquiring state lock. This may take a few moments...

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:

# aws_instance.My-Instnace-01[0] will be created
+ resource "aws_instance" "My-Instnace-01" {
  + ami                    = "ami-03f4878755434977f"
  + arn                   = (known after apply)
  + associate_public_ip_address = (known after apply)
  + availability_zone      = (known after apply)
  + cpu_core_count         = (known after apply)
  + cpu_threads_per_core   = (known after apply)
  + disable_api_stop       = (known after apply)
  + disable_api_termination = (known after apply)
  + ebs_optimized          = (known after apply)
  + get_password_data      = false
  + host_id                = (known after apply)
  + host_resource_group_arn = (known after apply)
  + iam_instance_profile   = (known after apply)
  + id                     = (known after apply)
  + instance_initiated_shutdown_behavior = (known after apply)
  + instance_lifecycle     = (known after apply)
  + instance_state         = (known after apply)
  + instance_type          = "t2.large"
  + ipv6_address_count     = (known after apply)
  + ipv6_addresses         = (known after apply)
  + key_name               = (known after apply)
  + monitoring             = (known after apply)
  + outpost_arn            = (known after apply)
  + password_data          = (known after apply)
  + placement_group        = (known after apply)
  + placement_partition_number = (known after apply)
  + primary_network_interface_id = (known after apply)
  + private_dns            = (known after apply)
  + private_ip             = (known after apply)
  + public_dns            = (known after apply)
  + public_ip             = (known after apply)
  + secondary_private_ips  = (known after apply)
  + security_groups        = (known after apply)
  + source_dest_check      = true
  + spot_instance_request_id = (known after apply)

```

```

+ source_dest_check      = true
+ spot_instance_request_id = (known after apply)
+ subnet_id             = (known after apply)
+ tags                  = {
  + "Name" = "UPES-EC2-Instnace"
}
+ tags_all              = {
  + "Name" = "UPES-EC2-Instnace"
}
+ tenancy                = (known after apply)
+ user_data              = (known after apply)
+ user_data_base64       = (known after apply)
+ user_data_replace_on_change = false
+ vpc_security_group_ids = (known after apply)
}

# aws_instance.My-Instnace-02[0] will be created
+ resource "aws_instance" "My-Instnace-02" {
  + ami                    = "ami-03f4878755434977f"
  + arn                   = (known after apply)
  + associate_public_ip_address = (known after apply)
  + availability_zone      = (known after apply)
  + cpu_core_count         = (known after apply)
  + cpu_threads_per_core   = (known after apply)
  + disable_api_stop       = (known after apply)
  + disable_api_termination = (known after apply)
  + ebs_optimized          = (known after apply)
  + get_password_data      = false
  + host_id                = (known after apply)
  + host_resource_group_arn = (known after apply)
  + iam_instance_profile   = (known after apply)
  + id                     = (known after apply)
  + instance_initiated_shutdown_behavior = (known after apply)
  + instance_lifecycle     = (known after apply)
  + instance_state         = (known after apply)
  + instance_type          = "t2.large"
  + ipv6_address_count     = (known after apply)
  + ipv6_addresses         = (known after apply)
  + key_name               = (known after apply)
  + monitoring             = (known after apply)
  + outpost_arn            = (known after apply)
  + password_data          = (known after apply)
  + placement_group        = (known after apply)
  + placement_partition_number = (known after apply)
  + primary_network_interface_id = (known after apply)
  + private_dns            = (known after apply)
  + private_ip             = (known after apply)
  + public_dns            = (known after apply)
  + public_ip             = (known after apply)
  + secondary_private_ips  = (known after apply)

```

```

+ key_name = (known after apply)
+ monitoring = (known after apply)
+ outpost_arn = (known after apply)
+ password_data = (known after apply)
+ placement_group = (known after apply)
+ placement_partition_number = (known after apply)
+ primary_network_interface_id = (known after apply)
+ private_dns = (known after apply)
+ private_ip = (known after apply)
+ public_dns = (known after apply)
+ public_ip = (known after apply)
+ secondary_private_ips = (known after apply)
+ security_groups = (known after apply)
+ source_dest_check = (known after apply)
+ spot_instance_request_id = (known after apply)
+ subnet_id = (known after apply)
+ tags = {
  + "Name" = "UPES-EC2-Instnace"
}
+ tags_all = {
  + "Name" = "UPES-EC2-Instnace"
}
+ tenancy = (known after apply)
+ user_data = (known after apply)
+ user_data_base64 = (known after apply)
+ user_data_replace_on_change = false
+ vpc_security_group_ids = (known after apply)
}

# aws_instance.My-Instnace-03[0] will be created
+ resource "aws_instance" "My-Instnace-03" {
  + ami = "ami-03f4878755434977f"
  + arn = (known after apply)
  + associate_public_ip_address = (known after apply)
  + availability_zone = (known after apply)
  + cpu_core_count = (known after apply)
  + cpu_threads_per_core = (known after apply)
  + disable_api_stop = (known after apply)
  + disable_api_termination = (known after apply)
  + ebs_optimized = (known after apply)
  + get_password_data = false
  + host_id = (known after apply)
  + host_resource_group_arn = (known after apply)
  + iam_instance_profile = (known after apply)
  + id = (known after apply)
  + instance_initiated_shutdown_behavior = (known after apply)
  + instance_lifecycle = (known after apply)
  + instance_state = (known after apply)
  + instance_type = "t2.large"
  + ipv6_address_count = (known after apply)

```

```

+ security_groups = (known after apply)
+ source_dest_check = true
+ spot_instance_request_id = (known after apply)
+ subnet_id = (known after apply)
+ tags = {
  + "Name" = "UPES-EC2-Instnace"
}
+ tags_all = {
  + "Name" = "UPES-EC2-Instnace"
}
+ tenancy = (known after apply)
+ user_data = (known after apply)
+ user_data_base64 = (known after apply)
+ user_data_replace_on_change = false
+ vpc_security_group_ids = (known after apply)
}

```

Plan: 3 to add, 0 to change, 0 to destroy.

Do you want to perform these actions?

Terraform will perform the actions described above.

Only 'yes' will be accepted to approve.

Enter a value: yes

```

aws_instance.My-Instnace-03[0]: Creating...
aws_instance.My-Instnace-01[0]: Creating...
aws_instance.My-Instnace-02[0]: Creating...
aws_instance.My-Instnace-02[0]: Still creating... [10s elapsed]
aws_instance.My-Instnace-03[0]: Still creating... [10s elapsed]
aws_instance.My-Instnace-01[0]: Still creating... [10s elapsed]
aws_instance.My-Instnace-03[0]: Still creating... [20s elapsed]
aws_instance.My-Instnace-01[0]: Still creating... [20s elapsed]
aws_instance.My-Instnace-02[0]: Still creating... [20s elapsed]
aws_instance.My-Instnace-01[0]: Creation complete after 24s [id=i-0edc01737ec2fe49a]
aws_instance.My-Instnace-03[0]: Creation complete after 24s [id=i-019432b41727b66a0]
aws_instance.My-Instnace-02[0]: Creation complete after 24s [id=i-0513ee647c371165f]

```

Apply complete! Resources: 3 added, 0 changed, 0 destroyed.

EC2 Dashboard	Instances (6) info	Connect	Instance state	Actions	Launch instances
EC2 Global View	Find Instance by attribute or tag (case-sensitive)	Any state			
Events					
▼ Instances					
Instances					
Instance Types					
Launch Templates					
Spot Requests					
Savings Plans					
Reserved Instances					

<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
<input type="checkbox"/>	UPES-EC2-Inst...	i-0a2c04548c6185370	Terminated	t2.micro	-	View alarms	ap-south-1a
<input type="checkbox"/>	UPES-EC2-Inst...	i-01591520199b756a	Terminated	t2.micro	-	View alarms	ap-south-1a
<input type="checkbox"/>	UPES-EC2-Inst...	i-01c6b6481182f8cd	Terminated	t2.micro	-	View alarms	ap-south-1a
<input type="checkbox"/>	UPES-EC2-Inst...	i-0513ee647c371165f	Running	t2.large	Initializing	View alarms	ap-south-1b
<input type="checkbox"/>	UPES-EC2-Inst...	i-019432b41727b66a0	Running	t2.large	Initializing	View alarms	ap-south-1b
<input type="checkbox"/>	UPES-EC2-Inst...	i-0edc01737ec2fe49a	Running	t2.large	2/2 checks passed	View alarms	ap-south-1b

Step 4: Perform Terraform Destroy:

```
F:\SEM 6\SPCM_LAB\SPCM_LAB_TERRAFORM>terraform destroy
aws_instance.My-Instance-02[0]: Refreshing state... [id=i-0513ee647c371165f]
aws_instance.My-Instance-03[0]: Refreshing state... [id=i-019432b41727b66a0]
aws_instance.My-Instance-01[0]: Refreshing state... [id=i-0edc01737ec2fe49a]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
- destroy

Terraform will perform the following actions:

# aws_instance.My-Instance-01[0] will be destroyed
- resource "aws_instance" "My-Instance-01" {
  ami              = "ami-03f4878755434977f" -> null
  arn              = "arn:aws:ec2:ap-south-1:637423348062:instance/i-0edc01737ec2fe49a" -> null
  associate_public_ip_address = true -> null
  availability_zone = "ap-south-1b" -> null
  cpu_core_count    = 2 -> null
  cpu_threads_per_core = 1 -> null
  disable_api_stop   = false -> null
  disable_api_termination = false -> null
  ebs_optimized      = false -> null
  get_password_data  = false -> null
  hibernation        = false -> null
  id                = "i-0edc01737ec2fe49a" -> null
  instance_initiated_shutdown_behavior = "stop" -> null
  instance_state     = "running" -> null
  instance_type      = "t2.large" -> null
  ipv6_address_count = 0 -> null
  ipv6_addresses     = [] -> null
  monitoring         = false -> null
  placement_partition_number = 0 -> null
  primary_network_interface_id = "eni-04f93e4535aa36f0b" -> null
  private_dns        = "ip-172-31-15-150.ap-south-1.compute.internal" -> null
  private_ip         = "172.31.15.150" -> null
  public_dns         = "ec2-13-201-4-12.ap-south-1.compute.amazonaws.com" -> null
  public_ip          = "13.201.4.12" -> null
  secondary_private_ips = [] -> null
  security_groups    = [
    "default",
  ] -> null
  source_dest_check   = true -> null
  subnet_id          = "subnet-0e5f5e3d310ebacda" -> null
  tags               = {
    "Name" = "UPES-EC2-Instnace"
  } -> null
  tags_all           = {
    "Name" = "UPES-EC2-Instnace"
  } -> null
  tenancy            = "default" -> null
  user_data_replace_on_change = false -> null
  vpc_security_group_ids = [
    "sg-0c6b5aae418c53ba2",
  ] -> null

- capacity_reservation_specification {
```

```
- capacity_reservation_specification {
  capacity_reservation_preference = "open" -> null
}

- cpu_options {
  core_count    = 2 -> null
  threads_per_core = 1 -> null
}

- credit_specification {
  cpu_credits = "standard" -> null
}

- enclave_options {
  enabled = false -> null
}

- maintenance_options {
  auto_recovery = "default" -> null
}

- metadata_options {
  http_endpoint         = "enabled" -> null
  http_protocol_ipv6    = "disabled" -> null
  http_put_response_hop_limit = 1 -> null
  http_tokens           = "optional" -> null
  instance_metadata_tags = "disabled" -> null
}

- private_dns_name_options {
  enable_resource_name_dns_a_record = false -> null
  enable_resource_name_dns_aaaa_record = false -> null
  hostname_type                     = "ip-name" -> null
}

- root_block_device {
  delete_on_termination = true -> null
  device_name           = "/dev/sdal" -> null
  encrypted             = false -> null
  iops                  = 100 -> null
  tags                  = {} -> null
  throughput            = 0 -> null
  volume_id             = "vol-034e2e9dc0826b5c9" -> null
  volume_size          = 8 -> null
  volume_type           = "gp2" -> null
}

# aws_instance.My-Instance-02[0] will be destroyed
- resource "aws_instance" "My-Instance-02" {
  ami              = "ami-03f4878755434977f" -> null
  arn              = "arn:aws:ec2:ap-south-1:637423348062:instance/i-0513ee647c371165f" -> null
  associate_public_ip_address = true -> null
  availability_zone = "ap-south-1b" -> null
  cpu_core_count    = 2 -> null
```

```

- availability_zone = "ap-south-1b" -> null
- cpu_core_count = 2 -> null
- cpu_threads_per_core = 1 -> null
- disable_api_stop = false -> null
- disable_api_termination = false -> null
- ebs_optimized = false -> null
- get_password_data = false -> null
- hibernation = false -> null
- id = "i-0513ee647c371165f" -> null
- instance_initiated_shutdown_behavior = "stop" -> null
- instance_state = "running" -> null
- instance_type = "t2.large" -> null
- ipv6_address_count = 0 -> null
- ipv6_addresses = [] -> null
- monitoring = false -> null
- placement_partition_number = 0 -> null
- primary_network_interface_id = "eni-0561ad241b40cc666" -> null
- private_dns = "ip-172-31-12-140.ap-south-1.compute.internal" -> null
- private_ip = "172.31.12.140" -> null
- public_dns = "ec2-13-235-49-48.ap-south-1.compute.amazonaws.com" -> null
- public_ip = "13.235.49.48" -> null
- secondary_private_ips = [] -> null
- security_groups = [
  - "default",
] -> null
- source_dest_check = true -> null
- subnet_id = "subnet-0e5f5e3d310ebacda" -> null
- tags = {
  - "Name" = "UPES-EC2-Instnace"
} -> null
- tags_all = {
  - "Name" = "UPES-EC2-Instnace"
} -> null
- tenancy = "default" -> null
- user_data_replace_on_change = false -> null
- vpc_security_group_ids = [
  - "sg-0c6b5aae418c53ba2",
] -> null
- capacity_reservation_specification {
  - capacity_reservation_preference = "open" -> null
}
- cpu_options {
  - core_count = 2 -> null
  - threads_per_core = 1 -> null
}
- credit_specification {
  - cpu_credits = "standard" -> null
}
- enclave_options {
  - enabled = false -> null
}

```

```

private_dns_name_options {
  - enable_resource_name_dns_a_record = false -> null
  - enable_resource_name_dns_aaaa_record = false -> null
  - hostname_type = "ip-name" -> null
}
- root_block_device {
  - delete_on_termination = true -> null
  - device_name = "/dev/sda1" -> null
  - encrypted = false -> null
  - iops = 100 -> null
  - tags = {} -> null
  - throughput = 0 -> null
  - volume_id = "vol-0c01d690dac16551f" -> null
  - volume_size = 8 -> null
  - volume_type = "gp2" -> null
}
}
# aws_instance.My-Instnace-03[0] will be destroyed
- resource "aws_instance" "My-Instnace-03" {
  ami = "ami-03f4878755434977f" -> null
  arm = "arn:aws:ec2:ap-south-1:637423348062:instance/1-019432b41727b66a0" -> null
  associate_public_ip_address = true -> null
  availability_zone = "ap-south-1b" -> null
  cpu_core_count = 2 -> null
  cpu_threads_per_core = 1 -> null
  disable_api_stop = false -> null
  disable_api_termination = false -> null
  ebs_optimized = false -> null
  get_password_data = false -> null
  hibernation = false -> null
  id = "i-019432b41727b66a0" -> null
  instance_initiated_shutdown_behavior = "stop" -> null
  instance_state = "running" -> null
  instance_type = "t2.large" -> null
  ipv6_address_count = 0 -> null
  ipv6_addresses = [] -> null
  monitoring = false -> null
  placement_partition_number = 0 -> null
  primary_network_interface_id = "eni-052e91421ce8664f2" -> null
  private_dns = "ip-172-31-5-134.ap-south-1.compute.internal" -> null
  private_ip = "172.31.5.134" -> null
  public_dns = "ec2-15-207-114-216.ap-south-1.compute.amazonaws.com" -> null
  public_ip = "15.207.114.216" -> null
  secondary_private_ips = [] -> null
  security_groups = [
    - "default",
  ] -> null
  source_dest_check = true -> null
  subnet_id = "subnet-0e5f5e3d310ebacda" -> null
  tags = {
    - "Name" = "UPES-EC2-Instnace"
  } -> null
  tags_all = {

```

```

- cpu_options {
  - core_count      = 2 -> null
  - threads_per_core = 1 -> null
}

- credit_specification {
  - cpu_credits = "standard" -> null
}

- enclave_options {
  - enabled = false -> null
}

- maintenance_options {
  - auto_recovery = "default" -> null
}

- metadata_options {
  - http_endpoint      = "enabled" -> null
  - http_protocol_ipv6 = "disabled" -> null
  - http_put_response_hop_limit = 1 -> null
  - http_tokens        = "optional" -> null
  - instance_metadata_tags = "disabled" -> null
}

- private_dns_name_options {
  - enable_resource_name_dns_a_record = false -> null
  - enable_resource_name_dns_aaaa_record = false -> null
  - hostname_type = "ip-name" -> null
}

- root_block_device {
  - delete_on_termination = true -> null
  - device_name           = "/dev/sda1" -> null
  - encrypted             = false -> null
  - iops                  = 100 -> null
  - tags                  = {} -> null
  - throughput            = 0 -> null
  - volume_id             = "vol-093a5f5a63c87d1d5" -> null
  - volume_size           = 8 -> null
  - volume_type           = "gp2" -> null
}
}

```

Plan: 0 to add, 0 to change, 3 to destroy.

Do you really want to destroy all resources?

Terraform will destroy all your managed infrastructure, as shown above.
There is no undo. Only 'yes' will be accepted to confirm.

Enter a value: yes

```

aws_instance.My-Instnace-02[0]: Destroying... [id=i-0513ee647c371165f]
aws_instance.My-Instnace-03[0]: Destroying... [id=i-019432b41727b66a0]
aws_instance.My-Instnace-01[0]: Destroying... [id=i-0edc01737ec2fe49a]

```

EC2 Dashboard

EC2 Global View

Events

Instances

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Instances (6) Info

Connect

Instance state

Actions

Launch instances

Find Instance by attribute or tag (case-sensitive)

Any state

< 1 >

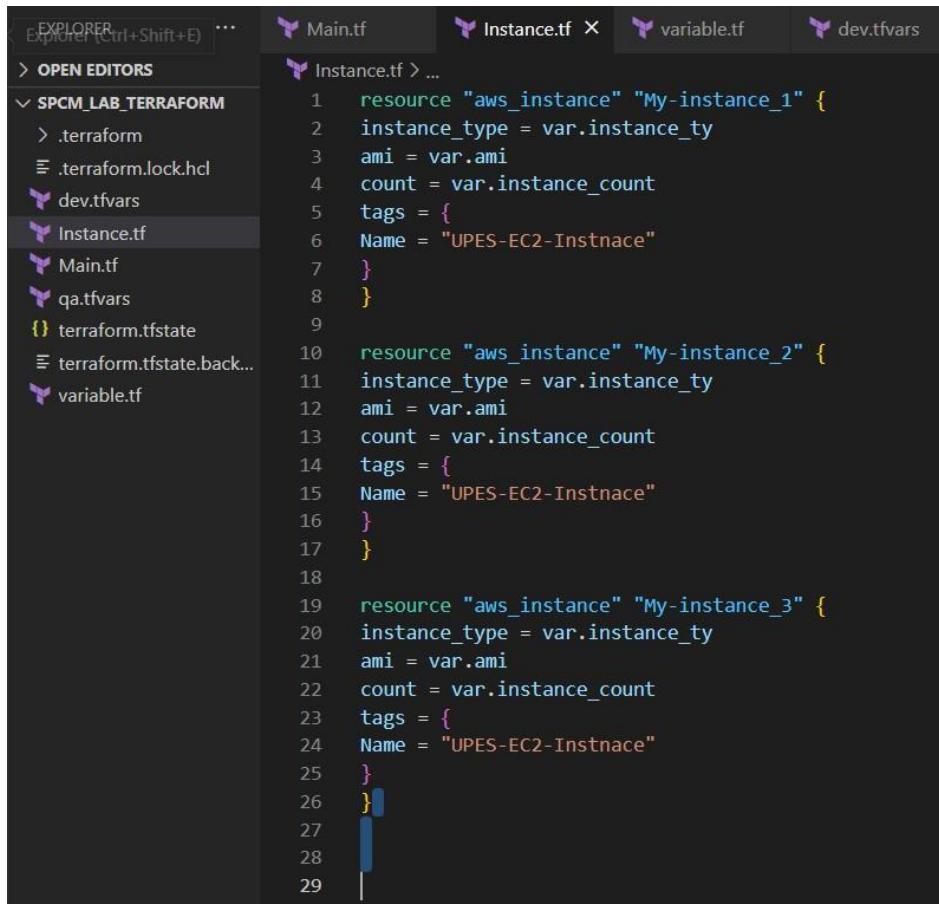
	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
	UPES-EC2-Inst...	i-0a2c04548c6185370	Terminated	t2.micro	=	View alarms +	ap-south-1a
	UPES-EC2-Inst...	i-0159152f0199b756a	Terminated	t2.micro	=	View alarms +	ap-south-1a
	UPES-EC2-Inst...	i-01c6be481182f8cd	Terminated	t2.micro	=	View alarms +	ap-south-1a
	UPES-EC2-Inst...	i-0513ee647c371165f	Terminated	t2.large	=	View alarms +	ap-south-1b
	UPES-EC2-Inst...	i-019432b41727b66a0	Terminated	t2.large	=	View alarms +	ap-south-1b
	UPES-EC2-Inst...	i-0edc01737ec2fe49a	Terminated	t2.large	=	View alarms +	ap-south-1b

****END OF EXPERIMENT-05****

LAB EXERCISE 6

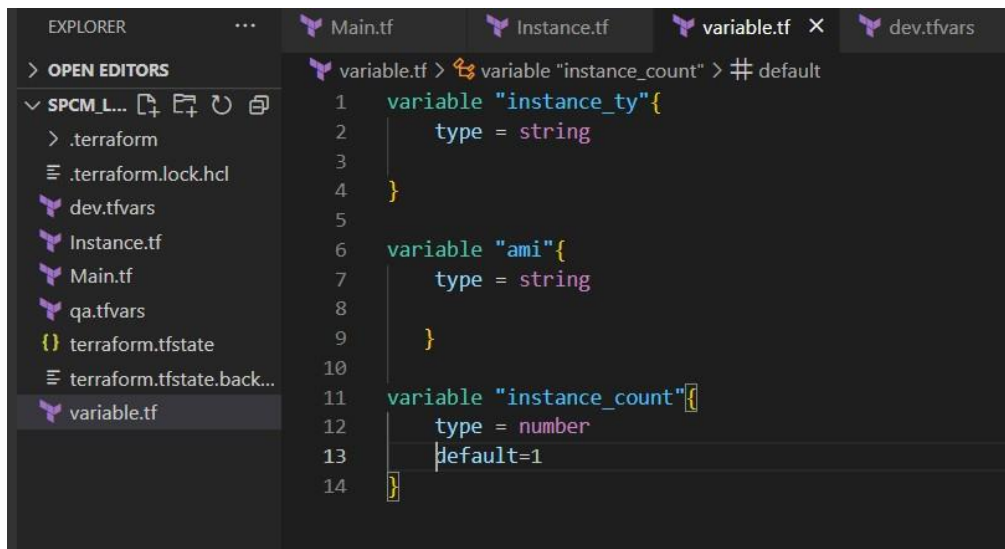
Aim: Terraform Multiple tfvars Files Objective:

Step 1: Create a instance.tf file

A screenshot of the Visual Studio Code editor interface. The Explorer sidebar on the left shows a project named 'SPCM_LAB_TERRAFORM' with files including '.terraform', '.terraform.lock.hcl', 'dev.tfvars', 'Instance.tf', 'Main.tf', 'qa.tfvars', 'terraform.tfstate', 'terraform.tfstate.back...', and 'variable.tf'. The 'Instance.tf' file is selected and its content is displayed in the main editor. The code defines three AWS EC2 instances, each with a unique name, instance type, AMI, count, and a tag. The tag name is 'UPES-EC2-Instnace' (note the typo in the image).

```
1 resource "aws_instance" "My-instance_1" {
2   instance_type = var.instance_ty
3   ami = var.ami
4   count = var.instance_count
5   tags = {
6     Name = "UPES-EC2-Instnace"
7   }
8 }
9
10 resource "aws_instance" "My-instance_2" {
11   instance_type = var.instance_ty
12   ami = var.ami
13   count = var.instance_count
14   tags = {
15     Name = "UPES-EC2-Instnace"
16   }
17 }
18
19 resource "aws_instance" "My-instance_3" {
20   instance_type = var.instance_ty
21   ami = var.ami
22   count = var.instance_count
23   tags = {
24     Name = "UPES-EC2-Instnace"
25   }
26 }
27
28
29
```

Step 2: Create a variable.tf file

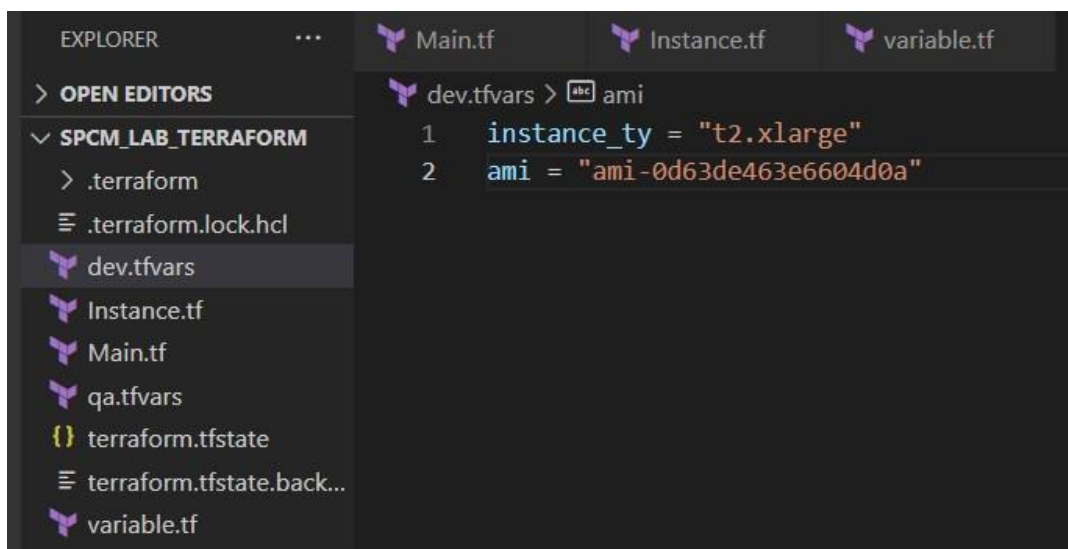


The screenshot shows the VS Code interface with the Explorer on the left and the variable.tf file open in the editor. The Explorer shows a project structure with folders like .terraform, .terraform.lock.hcl, and files like dev.tfvars, Instance.tf, Main.tf, qa.tfvars, terraform.tfstate, and terraform.tfstate.back... The variable.tf file contains the following Terraform code:

```
variable "instance_count" {  
  # default  
  type = string  
}  
  
variable "ami" {  
  type = string  
}  
  
variable "instance_count" {  
  type = number  
  default = 1  
}
```

Step 3: Create Multiple tfvars Files:

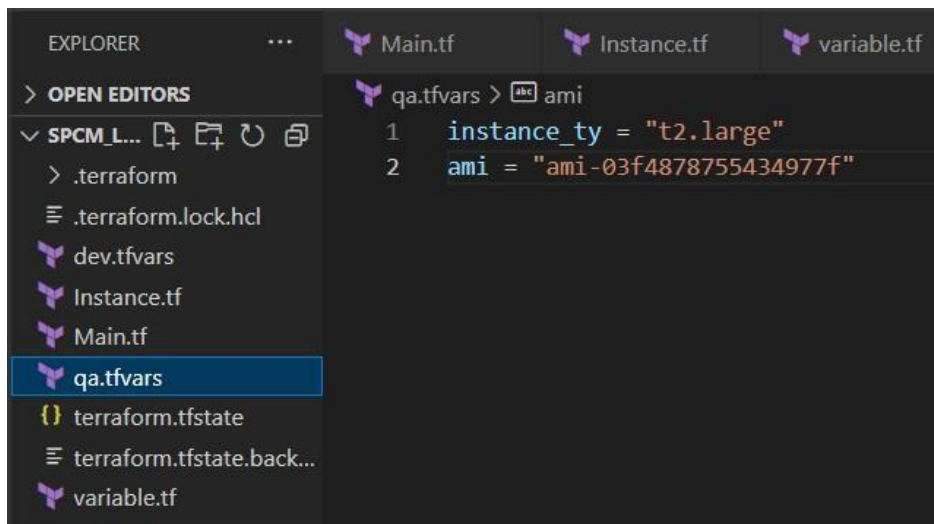
dev.tfvars



The screenshot shows the VS Code interface with the Explorer on the left and the dev.tfvars file open in the editor. The Explorer shows the same project structure as the previous screenshot. The dev.tfvars file contains the following Terraform variable assignments:

```
instance_ty = "t2.xlarge"  
ami = "ami-0d63de463e6604d0a"
```

qa.tfvars



Step 4: Now initializes

```
Initializing the backend...
```

```
Initializing provider plugins...
```

- Reusing previous version of hashicorp/aws from the dependency lock file
- Using previously-installed hashicorp/aws v5.31.0

```
Terraform has been successfully initialized!
```

```
You may now begin working with Terraform. Try running "terraform plan" to see  
any changes that are required for your infrastructure. All Terraform commands  
should now work.
```

```
If you ever set or change modules or backend configuration for Terraform,  
rerun this command to reinitialize your working directory. If you forget, other  
commands will detect it and remind you to do so if necessary.
```

```
F:\SEM 6\SPCM_LAB\SPCM_LAB_TERRAFORM>terraform validate  
Success! The configuration is valid.
```

Step 5: Apply for Dev Environment

```
F:\SEM 6\SPCR_LAB\SPCR_LAB_TERRAFORM>terraform apply -var-file=dev.tfvars

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:

# aws_instance.My-instance_1[0] will be created
+ resource "aws_instance" "My-instance_1" {
  + ami                    = "ami-0d63de463e6604d0a"
  + arn                   = (known after apply)
  + associate_public_ip_address = (known after apply)
  + availability_zone      = (known after apply)
  + cpu_core_count        = (known after apply)
  + cpu_threads_per_core  = (known after apply)
  + disable_api_stop      = (known after apply)
  + disable_api_termination = (known after apply)
  + ebs_optimized         = (known after apply)
  + get_password_data     = false
  + host_id               = (known after apply)
  + host_resource_group_arn = (known after apply)
  + iam_instance_profile   = (known after apply)
  + id                    = (known after apply)
  + instance_initiated_shutdown_behavior = (known after apply)
  + instance_lifecycle    = (known after apply)
  + instance_state        = (known after apply)
  + instance_type         = "t2.xlarge"
  + ipv6_address_count    = (known after apply)
  + ipv6_addresses        = (known after apply)
  + key_name              = (known after apply)
  + monitoring            = (known after apply)
  + outpost_arn           = (known after apply)
  + password_data         = (known after apply)
  + placement_group       = (known after apply)
  + placement_partition_number = (known after apply)
  + primary_network_interface_id = (known after apply)
  + private_dns           = (known after apply)
  + private_ip            = (known after apply)
  + public_dns            = (known after apply)
  + secondary_private_ips = (known after apply)
  + security_groups       = (known after apply)
  + source_dest_check     = true
  + spot_instance_request_id = (known after apply)
  + subnet_id            = (known after apply)
  + tags                  = {
    + "Name" = "UPES-EC2-Instnace"
  }
  + tags_all              = {

```

```

    + "Name" = "UPES-EC2-Instnace"
  }
  + tenancy                = (known after apply)
  + user_data              = (known after apply)
  + user_data_base64       = (known after apply)
  + user_data_replace_on_change = false
  + vpc_security_group_ids = (known after apply)
}

# aws_instance.My-instance_2[0] will be created
+ resource "aws_instance" "My-instance_2" {
  + ami                    = "ami-0d63de463e6604d0a"
  + arn                   = (known after apply)
  + associate_public_ip_address = (known after apply)
  + availability_zone      = (known after apply)
  + cpu_core_count        = (known after apply)
  + cpu_threads_per_core  = (known after apply)
  + disable_api_stop      = (known after apply)
  + disable_api_termination = (known after apply)
  + ebs_optimized         = (known after apply)
  + get_password_data     = false
  + host_id               = (known after apply)
  + host_resource_group_arn = (known after apply)
  + iam_instance_profile   = (known after apply)
  + id                    = (known after apply)
  + instance_initiated_shutdown_behavior = (known after apply)
  + instance_lifecycle    = (known after apply)
  + instance_state        = (known after apply)
  + instance_type         = "t2.xlarge"
  + ipv6_address_count    = (known after apply)
  + ipv6_addresses        = (known after apply)
  + key_name              = (known after apply)
  + monitoring            = (known after apply)
  + outpost_arn           = (known after apply)
  + password_data         = (known after apply)
  + placement_group       = (known after apply)
  + placement_partition_number = (known after apply)
  + primary_network_interface_id = (known after apply)
  + private_dns           = (known after apply)
  + private_ip            = (known after apply)
  + public_dns            = (known after apply)
  + secondary_private_ips = (known after apply)
  + security_groups       = (known after apply)
  + source_dest_check     = true
  + spot_instance_request_id = (known after apply)
  + subnet_id            = (known after apply)
  + tags                  = {
    + "Name" = "UPES-EC2-Instnace"
  }
  + tags_all              = {
    + "Name" = "UPES-EC2-Instnace"
  }
  + tenancy                = (known after apply)
  + user_data              = (known after apply)
  + user_data_base64       = (known after apply)
  + user_data_replace_on_change = false
  + vpc_security_group_ids = (known after apply)
}

# aws_instance.My-instance_3[0] will be created
+ resource "aws_instance" "My-instance_3" {
  + ami                    = "ami-0d63de463e6604d0a"

```

```

aws_instance.My-instance_1[0]: Creating...
aws_instance.My-instance_3[0]: Creating...
aws_instance.My-instance_2[0]: Creating...
aws_instance.My-instance_3[0]: Still creating... [10s elapsed]
aws_instance.My-instance_1[0]: Still creating... [10s elapsed]
aws_instance.My-instance_2[0]: Still creating... [10s elapsed]
aws_instance.My-instance_3[0]: Creation complete after 14s [id=i-0c7c8f277790ae190]
aws_instance.My-instance_1[0]: Creation complete after 17s [id=i-07666f246d189f668]
aws_instance.My-instance_2[0]: Still creating... [20s elapsed]
aws_instance.My-instance_2[0]: Creation complete after 23s [id=i-0224bf2482e03e687]

```

Apply complete! Resources: 3 added, 0 changed, 0 destroyed.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Placement group
UPES-EC2-Inst-1	i-0c7c8f277790ae190	Running	t2.xlarge	Initializing	View alarms	ap-south-1a	ec2
UPES-EC2-Inst-2	i-0224bf2482e03e687	Running	t2.xlarge	Initializing	View alarms	ap-south-1a	ec2
UPES-EC2-Inst-3	i-07666f246d189f668	Running	t2.xlarge	Initializing	View alarms	ap-south-1a	ec2

Step 6: Destroy Dev Environment

```

F:\SEN 6\SPCH_LAB\SPCH_LAB_TERRAFORM>terraform destroy -var-file=dev.tfvars
aws_instance.My-instance_3[0]: Refreshing state... [id=i-0c7c8f277790ae190]
aws_instance.My-instance_1[0]: Refreshing state... [id=i-07666f246d189f668]
aws_instance.My-instance_2[0]: Refreshing state... [id=i-0224bf2482e03e687]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
- destroy

Terraform will perform the following actions:

# aws_instance.My-instance_1[0] will be destroyed
- resource "aws_instance" "My-instance_1" {
  - ami                               = "ami-0d63de63e660d8a" -> null
  - arm                               = "arn:aws:ec2:ap-south-1:637423348062:instance/i-07666f246d189f668" -> null
  - associate_public_ip_address      = true -> null
  - availability_zone                 = "ap-south-1a" -> null
  - cpu_core_count                    = 4 -> null
  - cpu_threads_per_core              = 1 -> null
  - disable_api_stop                  = false -> null
  - disable_api_termination           = false -> null
  - ebs_optimized                     = false -> null
  - get_password_data                 = false -> null
  - hibernation                       = false -> null
  - id                                = "i-07666f246d189f668" -> null
  - instance_initiated_shutdown_behavior = "stop" -> null
  - instance_state                    = "running" -> null
  - instance_type                     = "t2.xlarge" -> null
  - ipv6_address_count                = 0 -> null
  - ipv6_addresses                    = [] -> null
  - monitoring                        = false -> null
  - placement_partition_number        = 0 -> null
  - primary_network_interface_id      = "eni-092f1b4b8b39306b9" -> null
  - private_dns                       = "ip-172-31-35-201.ap-south-1.compute.internal" -> null
  - private_ip                        = "172.31.35.201" -> null
  - public_dns                        = "ec2-13-201-126-199.ap-south-1.compute.amazonaws.com" -> null
  - public_ip                         = "13.201.126.199" -> null
  - secondary_private_ips              = [] -> null
  - security_groups                   = [
    - "default",
  ] -> null
  - source_dest_check                 = true -> null
  - subnet_id                         = "subnet-0fb95688eaa188f7d" -> null
  - tags                              = {
    - "Name" = "UPES-EC2-Instnace"
  } -> null
  - tags_all                          = {
    - "Name" = "UPES-EC2-Instnace"
  } -> null
  - tenancy                           = "default" -> null
}

```

```

- user_data_replace_on_change      = false -> null
- vpc_security_group_ids           = [
  - "sg-0c6b5aae418c53ba2",
] -> null

- capacity_reservation_specification {
  - capacity_reservation_preference = "open" -> null
}

- cpu_options {
  - core_count      = 4 -> null
  - threads_per_core = 1 -> null
}

- credit_specification {
  - cpu_credits = "standard" -> null
}

- enclave_options {
  - enabled = false -> null
}

- maintenance_options {
  - auto_recovery = "default" -> null
}

- metadata_options {
  - http_endpoint      = "enabled" -> null
  - http_protocol_ipv6 = "disabled" -> null
  - http_put_response_hop_limit = 2 -> null
  - http_tokens        = "required" -> null
  - instance_metadata_tags = "disabled" -> null
}

- private_dns_name_options {
  - enable_resource_name_dns_a_record      = false -> null
  - enable_resource_name_dns_aaaa_record = false -> null
  - hostname_type                         = "ip-name" -> null
}

- root_block_device {
  - delete_on_termination = true -> null
  - device_name           = "/dev/xvda" -> null
  - encrypted             = false -> null
  - iops                  = 3000 -> null
  - tags                  = {} -> null
  - throughput            = 125 -> null
  - volume_id             = "vol-0eb890ee6d0eb8c4a" -> null
  - volume_size           = 8 -> null
  - volume_type           = "gp3" -> null
}

```

```

}
}

# Aws.Instance My-Instance-2[0] will be destroyed
resource "aws_instance" "My-Instance-2" {
- ami                  = "ami-0d63de463e66e4d0a" -> null
- arn                 = "arn:aws:ec2:ap-south-1:637423348062:instance/i-0224bf2482e03e687" -> null
- associate_public_ip_address = true -> null
- availability_zone    = "ap-south-1a" -> null
- cpu_core_count       = 4 -> null
- cpu_threads_per_core = 1 -> null
- disable_api_stop     = false -> null
- disable_api_termination = false -> null
- ebs_optimized        = false -> null
- get_password_data    = false -> null
- hibernation          = false -> null
- id                  = "i-0224bf2482e03e687" -> null
- instance_initiated_shutdown_behavior = "stop" -> null
- instance_state       = "running" -> null
- instance_type        = "t2.xlarge" -> null
- ipv6_address_count   = 0 -> null
- ipv6_addresses       = [] -> null
- monitoring           = false -> null
- placement_partition_number = 0 -> null
- primary_network_interface_id = "eni-0092d5b0b8d0efb49" -> null
- private_dns          = "ip-172.31.34.41.ap-south-1.compute.internal" -> null
- private_ip           = "172.31.34.41" -> null
- public_dns           = "ec2-13-232-252-248.ap-south-1.compute.amazonaws.com" -> null
- public_ip            = "13.232.252.248" -> null
- secondary_private_ips = [] -> null
- security_groups      = [
  - "default",
] -> null
- source_dest_check    = true -> null
- subnet_id           = "subnet-0fb95688eaa188f7d" -> null
- tags                 = {
  "Name" = "UPES-EC2-Instnace"
} -> null
- tags_all            = {
  "Name" = "UPES-EC2-Instnace"
} -> null
- tenancy              = "default" -> null
- user_data_replace_on_change = false -> null
- vpc_security_group_ids = [
  - "sg-0c6b5aae418c53ba2",
] -> null
- capacity_reservation_specification {
  - capacity_reservation_preference = "open" -> null
}
}

```

```

- core_count          = 4 -> null
- threads_per_core    = 1 -> null
}

- credit_specification {
-   cpu_credits = "standard" -> null
}

- enclave_options {
-   enabled = false -> null
}

- maintenance_options {
-   auto_recovery = "default" -> null
}

- metadata_options {
-   http_endpoint          = "enabled" -> null
-   http_protocol_ipv6     = "disabled" -> null
-   http_put_response_hop_limit = 2 -> null
-   http_tokens            = "required" -> null
-   instance_metadata_tags = "disabled" -> null
}

- private_dns_name_options {
-   enable_resource_name_dns_a_record    = false -> null
-   enable_resource_name_dns_aaaa_record = false -> null
-   hostname_type                       = "ip-name" -> null
}

- root_block_device {
-   delete_on_termination = true -> null
-   device_name            = "/dev/xvda" -> null
-   encrypted              = false -> null
-   iops                   = 3000 -> null
-   tags                   = {} -> null
-   throughput             = 125 -> null
-   volume_id              = "vol-094b704f3be5d5220" -> null
-   volume_size            = 8 -> null
-   volume_type            = "gp3" -> null
}
}

```

Plan: 0 to add, 0 to change, 3 to destroy.

Do you really want to destroy all resources?

Terraform will destroy all your managed infrastructure, as shown above.
There is no undo. Only 'yes' will be accepted to confirm.

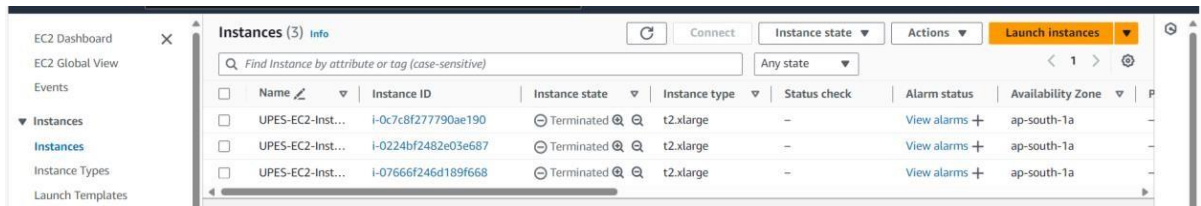
Enter a value: yes

```

aws_instance.My-instance_3[0]: Destroying... [id=i-0c7c8f277790ae190]
aws_instance.My-instance_2[0]: Destroying... [id=i-0224bf2482e03e687]
aws_instance.My-instance_1[0]: Destroying... [id=i-07666f246d189f668]
aws_instance.My-instance_1[0]: Still destroying... [id=i-07666f246d189f668, 10s elapsed]
aws_instance.My-instance_2[0]: Still destroying... [id=i-0224bf2482e03e687, 10s elapsed]
aws_instance.My-instance_3[0]: Still destroying... [id=i-0c7c8f277790ae190, 10s elapsed]
aws_instance.My-instance_2[0]: Still destroying... [id=i-0224bf2482e03e687, 21s elapsed]
aws_instance.My-instance_3[0]: Still destroying... [id=i-0c7c8f277790ae190, 21s elapsed]
aws_instance.My-instance_1[0]: Still destroying... [id=i-07666f246d189f668, 21s elapsed]
aws_instance.My-instance_3[0]: Still destroying... [id=i-0c7c8f277790ae190, 31s elapsed]
aws_instance.My-instance_2[0]: Still destroying... [id=i-0224bf2482e03e687, 31s elapsed]
aws_instance.My-instance_1[0]: Still destroying... [id=i-07666f246d189f668, 31s elapsed]
aws_instance.My-instance_2[0]: Destruction complete after 32s
aws_instance.My-instance_3[0]: Destruction complete after 32s
aws_instance.My-instance_1[0]: Destruction complete after 32s

```

Destroy complete! Resources: 3 destroyed.



Step 7: Apply for Qa Environment

```
F:\SEM 6\SPCH_LAB\SPCH_LAB_TERRAFORM>terraform apply -var-file=qa.tfvars

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:

# aws_instance.My-instance_1[0] will be created
+ resource "aws_instance" "My-instance_1" {
  + ami                     = "ami-03f4878755434977f"
  + arn                    = (known after apply)
  + associate_public_ip_address = (known after apply)
  + availability_zone       = (known after apply)
  + cpu_core_count          = (known after apply)
  + cpu_threads_per_core    = (known after apply)
  + disable_api_stop        = (known after apply)
  + disable_api_termination = (known after apply)
  + ebs_optimized           = (known after apply)
  + get_password_data       = false
  + host_id                 = (known after apply)
  + host_resource_group_arn = (known after apply)
  + iam_instance_profile    = (known after apply)
  + id                      = (known after apply)
  + instance_initiated_shutdown_behavior = (known after apply)
  + instance_lifecycle      = (known after apply)
  + instance_state          = (known after apply)
  + instance_type           = "t2.large"
  + ipv6_address_count      = (known after apply)
  + ipv6_addresses          = (known after apply)
  + key_name                = (known after apply)
  + monitoring              = (known after apply)
  + outpost_arn             = (known after apply)
  + password_data           = (known after apply)
  + placement_group         = (known after apply)
  + placement_partition_number = (known after apply)
  + primary_network_interface_id = (known after apply)
  + private_dns             = (known after apply)
  + private_ip              = (known after apply)
  + public_dns              = (known after apply)
  + public_ip               = (known after apply)
  + secondary_private_ips   = (known after apply)
  + security_groups         = (known after apply)
  + source_dest_check       = true
  + spot_instance_request_id = (known after apply)
  + subnet_id               = (known after apply)
  + tags                    = {
    + "Name" = "UPES-EC2-Instnace"
  }
  + tags_all                = {

```

```

    + "Name" = "UPES-EC2-Instnace"
  }
  + tenancy                = (known after apply)
  + user_data              = (known after apply)
  + user_data_base64       = (known after apply)
  + user_data_replace_on_change = false
  + vpc_security_group_ids = (known after apply)
}

# aws_instance.My-instance_2[0] will be created
+ resource "aws_instance" "My-instance_2" {
  + ami                     = "ami-03f4878755434977f"
  + arn                    = (known after apply)
  + associate_public_ip_address = (known after apply)
  + availability_zone       = (known after apply)
  + cpu_core_count          = (known after apply)
  + cpu_threads_per_core    = (known after apply)
  + disable_api_stop        = (known after apply)
  + disable_api_termination = (known after apply)
  + ebs_optimized           = (known after apply)
  + get_password_data       = false
  + host_id                 = (known after apply)
  + host_resource_group_arn = (known after apply)
  + iam_instance_profile    = (known after apply)
  + id                      = (known after apply)
  + instance_initiated_shutdown_behavior = (known after apply)
  + instance_lifecycle      = (known after apply)
  + instance_state          = (known after apply)
  + instance_type           = "t2.large"
  + ipv6_address_count      = (known after apply)
  + ipv6_addresses          = (known after apply)
  + key_name                = (known after apply)
  + monitoring              = (known after apply)
  + outpost_arn             = (known after apply)
  + password_data           = (known after apply)
  + placement_group         = (known after apply)
  + placement_partition_number = (known after apply)
  + primary_network_interface_id = (known after apply)
  + private_dns             = (known after apply)
  + private_ip              = (known after apply)
  + public_dns              = (known after apply)
  + public_ip               = (known after apply)
  + secondary_private_ips   = (known after apply)
  + security_groups         = (known after apply)
  + source_dest_check       = true
  + spot_instance_request_id = (known after apply)
  + subnet_id               = (known after apply)
  + tags                    = {
    + "Name" = "UPES-EC2-Instnace"
  }
}

```



```

+ tenancy = (known after apply)
+ user_data = (known after apply)
+ user_data_base64 = (known after apply)
+ user_data_replace_on_change = false
+ vpc_security_group_ids = (known after apply)
}

# aws_instance.My-instance_3[0] will be created
+ resource "aws_instance" "My-instance_3" {
+   ami = "ami-03f4878755434977f"
+   arn = (known after apply)
+   associate_public_ip_address = (known after apply)
+   availability_zone = (known after apply)
+   cpu_core_count = (known after apply)
+   cpu_threads_per_core = (known after apply)
+   disable_api_stop = (known after apply)
+   disable_api_termination = (known after apply)
+   ebs_optimized = (known after apply)
+   get_password_data = false
+   host_id = (known after apply)
+   host_resource_group_arn = (known after apply)
+   iam_instance_profile = (known after apply)
+   id = (known after apply)
+   instance_initiated_shutdown_behavior = (known after apply)
+   instance_lifecycle = (known after apply)
+   instance_state = (known after apply)
+   instance_type = "t2.large"
+   ipv6_address_count = (known after apply)
+   ipv6_addresses = (known after apply)
+   key_name = (known after apply)
+   monitoring = (known after apply)
+   outpost_arn = (known after apply)
+   password_data = (known after apply)
+   placement_group = (known after apply)
+   placement_partition_number = (known after apply)
+   primary_network_interface_id = (known after apply)
+   private_dns = (known after apply)
+   private_ip = (known after apply)
+   public_dns = (known after apply)
+   public_ip = (known after apply)
+   secondary_private_ips = (known after apply)
+   security_groups = (known after apply)
+   source_dest_check = true
+   spot_instance_request_id = (known after apply)
+   subnet_id = (known after apply)
+   tags = {
+     "Name" = "UPES-EC2-Instnace"
+   }
+   tags_all = {
+     "Name" = "UPES-EC2-Instnace"
+   }
+   tenancy = (known after apply)
+   user_data = (known after apply)
+   user_data_base64 = (known after apply)
+   user_data_replace_on_change = false
+   vpc_security_group_ids = (known after apply)
}

```

EC2 Dashboard

Instances (6) info

Find instance by attribute or tag (case-sensitive)

Any state

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Platform
UPES-EC2-Inst...	i-0c7c8f277790ae190	Terminated	t2.large	-	View alarms +	ap-south-1a	-
UPES-EC2-Inst...	i-0224b02482e05e687	Terminated	t2.xlarge	-	View alarms +	ap-south-1a	-
UPES-EC2-Inst...	i-07668f246d189f668	Terminated	t2.xlarge	-	View alarms +	ap-south-1a	-
UPES-EC2-Inst...	i-06c77b7054044392	Running	t2.large	⊙ Initializing	View alarms +	ap-south-1b	ec2
UPES-EC2-Inst...	i-0bd87cae8f0865266	Running	t2.large	⊙ Initializing	View alarms +	ap-south-1b	ec2
UPES-EC2-Inst...	i-02656e705a096951b	Running	t2.large	⊙ Initializing	View alarms +	ap-south-1b	ec2

Step 8: Destroy for Qa Environment


```

F:\SEM 6\SPON_LAB\SPON_LAB_TERRAFORM\terraform destroy -var-file=vars.tfvars
aws_instance.My-instance_3[0]: Refreshing state... [Id=1-02656e705a009951b]
aws_instance.My-instance_1[0]: Refreshing state... [Id=1-06c77fb785004392]
aws_instance.My-instance_2[0]: Refreshing state... [Id=1-06c77fb785004392]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
  destroy

Terraform will perform the following actions:

# aws_instance.My-instance_1[0] will be destroyed
resource "aws_instance" "My-instance_1" {
  ami              = "ami-03f4878785043077f" -> null
  arm              = "arn:aws:ec2:ap-south-1:637423348062:instance/1-06c77fb785004392" -> null
  associate_public_ip_address = true -> null
  availability_zone = "ap-south-1b" -> null
  cpu_core_count    = 2 -> null
  cpu_threads_per_core = 1 -> null
  disable_api_stop   = false -> null
  disable_api_termination = false -> null
  ebs_optimized      = false -> null
  get_password_data  = false -> null
  hibernation        = false -> null
  id                = "i-06c77fb785004392" -> null
  instance_initiated_shutdown_behavior = "stop" -> null
  instance_state     = "pending" -> null
  instance_type      = "t2.large" -> null
  ipv6_address_count = 0 -> null
  ipv6_addresses     = [] -> null
  monitoring         = false -> null
  placement_partition_number = 0 -> null
  primary_network_interface_id = "eni-018cd0b787ae7d466" -> null
  private_dns        = "ip-172-31-0-0.ap-south-1.compute.internal" -> null
  private_ip         = "172.31.0.0" -> null
  public_dns         = "ec2-1109-122-109.ap-south-1.compute.amazonaws.com" -> null
  public_ip          = "3.109.122.109" -> null
  secondary_private_ips = [] -> null
  security_groups    = [
    "default",
  ] -> null
  source_dest_check   = true -> null
  subnet_id          = "subnet-0e5f6e3d310ebacda" -> null
  tags               = {
    "Name" = "UPES-EC2-Instance"
  } -> null
  tags_all           = {
    "Name" = "UPES-EC2-Instance"
  } -> null
  tenancy            = "default" -> null
  user_data_replace_on_change = false -> null
  vpc_security_group_ids = [
    "sg-0c6b5aae418c53ba2",
  ] -> null
  capacity_reservation_specification {

```

```

- tenancy                                = "default" -> null
- user_data_replace_on_change            = false -> null
- vpc_security_group_ids                 = [
  "sg-0c6b5aae418c53ba2",
] -> null
- capacity_reservation_specification {
  - capacity_reservation_preference = "open" -> null
}
- cpu_options {
  - core_count          = 2 -> null
  - threads_per_core    = 1 -> null
}
- credit_specification {
  - cpu_credits = "standard" -> null
}
- enclave_options {
  - enabled = false -> null
}
- maintenance_options {
  - auto_recovery = "default" -> null
}
- metadata_options {
  - http_endpoint          = "enabled" -> null
  - http_protocol_ipv6     = "disabled" -> null
  - http_put_response_hop_limit = 1 -> null
  - http_tokens            = "optional" -> null
  - instance_metadata_tags = "disabled" -> null
}
- private_dns_name_options {
  - enable_resource_name_dns_a_record    = false -> null
  - enable_resource_name_dns_aaaa_record = false -> null
  - hostname_type                        = "ip-name" -> null
}
- root_block_device {
  - delete_on_termination = true -> null
  - device_name           = "/dev/sda1" -> null
  - encrypted             = false -> null
  - iops                  = 100 -> null
  - tags                  = {} -> null
  - throughput            = 0 -> null
  - volume_id             = "vol-0634da595e19b341c" -> null
  - volume_size           = 8 -> null
  - volume_type            = "gp2" -> null
}
}

# aws_instance.My-instance_2[0] will be destroyed
- resource "aws_instance" "My-instance_2" {

```

```

- core_count      = 2 -> null
- threads_per_core = 1 -> null
}

- credit_specification {
-   cpu_credits = "standard" -> null
}

- enclave_options {
-   enabled = false -> null
}

- maintenance_options {
-   auto_recovery = "default" -> null
}

- metadata_options {
-   http_endpoint      = "enabled" -> null
-   http_protocol_ipv6 = "disabled" -> null
-   http_put_response_hop_limit = 1 -> null
-   http_tokens        = "optional" -> null
-   instance_metadata_tags = "disabled" -> null
}

- private_dns_name_options {
-   enable_resource_name_dns_a_record   = false -> null
-   enable_resource_name_dns_aaaa_record = false -> null
-   hostname_type                       = "ip-name" -> null
}

- root_block_device {
-   delete_on_termination = true -> null
-   device_name            = "/dev/sda1" -> null
-   encrypted              = false -> null
-   iops                   = 100 -> null
-   tags                   = {} -> null
-   throughput             = 0 -> null
-   volume_id              = "vol-0afbbb2fbd6ece80d" -> null
-   volume_size            = 8 -> null
-   volume_type            = "gp2" -> null
}
}

# aws_instance.My-instance_3[0] will be destroyed
- resource "aws_instance" "My-instance_3" {
-   ami                      = "ami-03f4878755434977f" -> null
-   arn                     = "arn:aws:ec2:ap-south-1:637423348062:instance/i-02656e705a096951b" -> null
-   associate_public_ip_address = true -> null
-   availability_zone        = "ap-south-1b" -> null
-   cpu_core_count           = 2 -> null
-   cpu_threads_per_core     = 1 -> null
-   disable_api_stop         = false -> null
-   disable_api_termination  = false -> null
-   ebs_optimized            = false -> null
-   get_password_data        = false -> null
-   hibernation              = false -> null

```

```

    }

    - metadata_options {
      - http_endpoint          = "enabled" -> null
      - http_protocol_ipv6     = "disabled" -> null
      - http_put_response_hop_limit = 1 -> null
      - http_tokens            = "optional" -> null
      - instance_metadata_tags   = "disabled" -> null
    }

    - private_dns_name_options {
      - enable_resource_name_dns_a_record = false -> null
      - enable_resource_name_dns_aaaa_record = false -> null
      - hostname_type                     = "ip-name" -> null
    }

    - root_block_device {
      - delete_on_termination = true -> null
      - device_name           = "/dev/sdal" -> null
      - encrypted             = false -> null
      - iops                  = 100 -> null
      - tags                  = {} -> null
      - throughput            = 0 -> null
      - volume_id             = "vol-010656a1835c8dbff" -> null
      - volume_size           = 8 -> null
      - volume_type           = "gp2" -> null
    }
  }
}

```

Plan: 0 to add, 0 to change, 3 to destroy.

Do you really want to destroy all resources?

Terraform will destroy all your managed infrastructure, as shown above.
There is no undo. Only 'yes' will be accepted to confirm.

Enter a value: yes

```

aws_instance.My-instance_2[0]: Destroying... [id=i-0bd87cae8f08e5266]
aws_instance.My-instance_3[0]: Destroying... [id=i-02656e705a096951b]
aws_instance.My-instance_1[0]: Destroying... [id=i-06c77fb7854044392]
aws_instance.My-instance_1[0]: Still destroying... [id=i-06c77fb7854044392, 10s elapsed]
aws_instance.My-instance_3[0]: Still destroying... [id=i-02656e705a096951b, 10s elapsed]
aws_instance.My-instance_2[0]: Still destroying... [id=i-0bd87cae8f08e5266, 10s elapsed]
aws_instance.My-instance_2[0]: Still destroying... [id=i-0bd87cae8f08e5266, 20s elapsed]
aws_instance.My-instance_3[0]: Still destroying... [id=i-02656e705a096951b, 20s elapsed]
aws_instance.My-instance_1[0]: Still destroying... [id=i-06c77fb7854044392, 20s elapsed]
aws_instance.My-instance_2[0]: Still destroying... [id=i-0bd87cae8f08e5266, 30s elapsed]
aws_instance.My-instance_1[0]: Still destroying... [id=i-06c77fb7854044392, 30s elapsed]
aws_instance.My-instance_3[0]: Still destroying... [id=i-02656e705a096951b, 30s elapsed]
aws_instance.My-instance_2[0]: Destruction complete after 33s
aws_instance.My-instance_1[0]: Destruction complete after 33s
aws_instance.My-instance_3[0]: Destruction complete after 33s

```

Destroy complete! Resources: 3 destroyed.

EC2 Dashboard	×	Instances (6) info	🔄	Connect	Instance state ▾	Actions ▾	Launch Instances ▾	🔍
EC2 Global View								
Events								
▼ Instances								
Instances								
Instance Types								
Launch Templates								
Spot Requests								
Savings Plans								

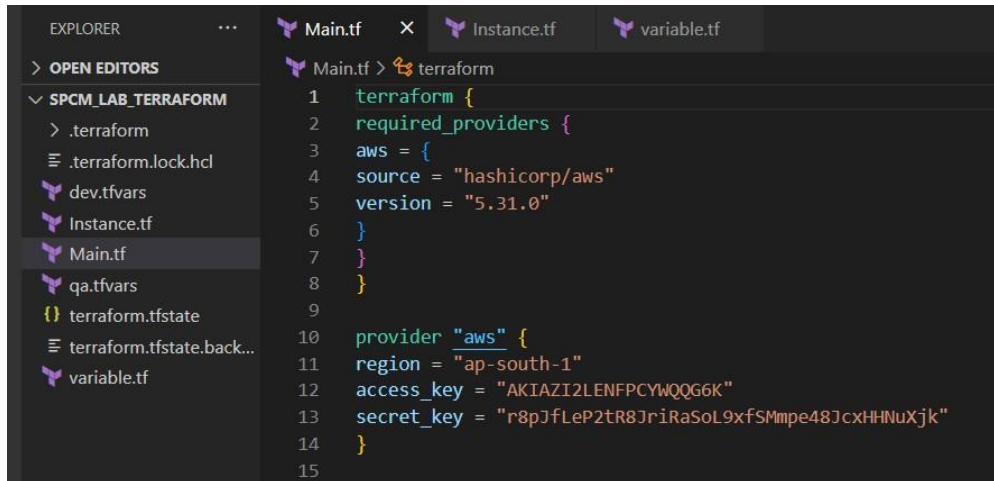
<input type="checkbox"/>	Name ↗	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
<input type="checkbox"/>	UPES-EC2-Inst...	i-0c7c8f277790ae190	⊙ Terminated 🔍	t2.xlarge	-	View alarms +	ap-south-1a
<input type="checkbox"/>	UPES-EC2-Inst...	i-0224bf2482e03e687	⊙ Terminated 🔍	t2.xlarge	-	View alarms +	ap-south-1a
<input type="checkbox"/>	UPES-EC2-Inst...	i-07666f246d189f668	⊙ Terminated 🔍	t2.xlarge	-	View alarms +	ap-south-1a
<input type="checkbox"/>	UPES-EC2-Inst...	i-06c77fb7854044392	⊙ Terminated 🔍	t2.large	-	View alarms +	ap-south-1b
<input type="checkbox"/>	UPES-EC2-Inst...	i-0bd87cae8f08e5266	⊙ Terminated 🔍	t2.large	-	View alarms +	ap-south-1b
<input type="checkbox"/>	UPES-EC2-Inst...	i-02656e705a096951b	⊙ Terminated 🔍	t2.large	-	View alarms +	ap-south-1b

****END OF EXPERIMENT-06****

LAB EXERCISE 7

Aim: Creating Multiple IAM Users in Terraform

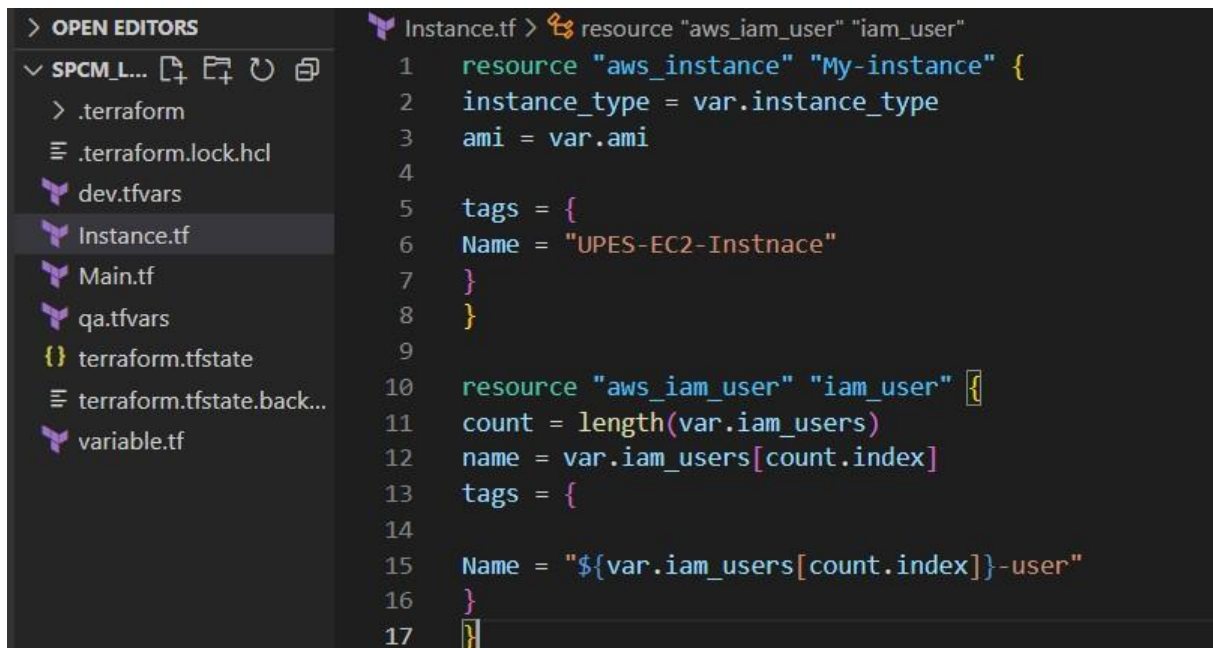
Step 1: Create a main.tf file.



The screenshot shows the VS Code interface with the Explorer on the left and the Editor on the right. The Explorer shows a project named 'SPCM_LAB_TERRAFORM' with files like .terraform, .terraform.lock.hcl, dev.tfvars, Instance.tf, Main.tf, qa.tfvars, terraform.tfstate, terraform.tfstate.back..., and variable.tf. The Editor shows the content of Main.tf, which is a Terraform configuration file. It starts with a terraform block containing required_providers for aws, specifying the source as 'hashicorp/aws' and the version as '5.31.0'. It then has a provider block for 'aws' with region 'ap-south-1', access_key 'AKIAZI2LENFPCYWQQG6K', and secret_key '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'.

```
1 terraform {
2   required_providers {
3     aws = {
4       source = "hashicorp/aws"
5       version = "5.31.0"
6     }
7   }
8 }
9
10 provider "aws" {
11   region = "ap-south-1"
12   access_key = "AKIAZI2LENFPCYWQQG6K"
13   secret_key = "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"
14 }
15
```

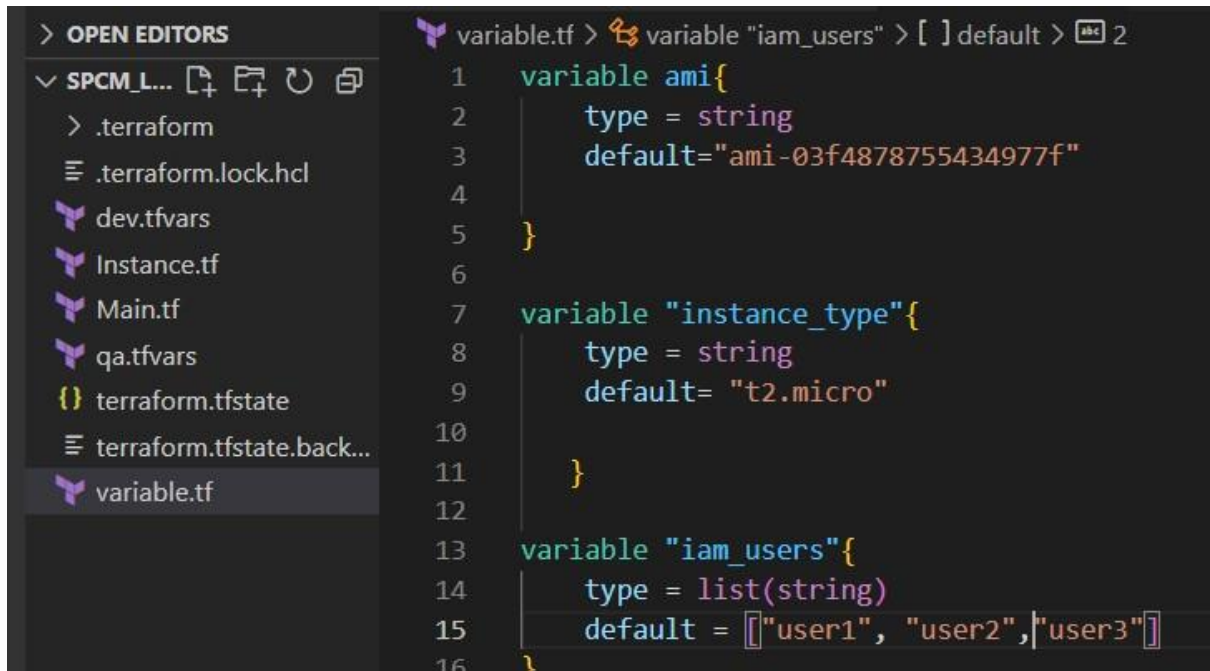
Step 2: Create a instance.tf file



The screenshot shows the VS Code interface with the Explorer on the left and the Editor on the right. The Explorer shows the same project as before, but now Instance.tf is selected. The Editor shows the content of Instance.tf, which is a Terraform configuration file. It starts with a resource block for 'aws_instance' named 'My-instance', with instance_type set to var.instance_type and ami set to var.ami. It then has a tags block with Name 'UPES-EC2-Instnace'. Finally, it has a resource block for 'aws_iam_user' named 'iam_user', with count set to length(var.iam_users), name set to var.iam_users[count.index], and tags set to a block with Name set to '\${var.iam_users[count.index]}-user'.

```
1 resource "aws_instance" "My-instance" {
2   instance_type = var.instance_type
3   ami = var.ami
4
5   tags = {
6     Name = "UPES-EC2-Instnace"
7   }
8 }
9
10 resource "aws_iam_user" "iam_user" {
11   count = length(var.iam_users)
12   name = var.iam_users[count.index]
13   tags = {
14
15     Name = "${var.iam_users[count.index]}-user"
16   }
17 }
```

Step 3: Create a variable.tf file



The screenshot shows the VS Code interface with the 'variable.tf' file open. The left sidebar shows the project structure with files like .terraform, .terraform.lock.hcl, dev.tfvars, Instance.tf, Main.tf, qa.tfvars, terraform.tfstate, and terraform.tfstate.back... The main editor shows the following Terraform code:

```
1 variable ami{
2     type = string
3     default="ami-03f4878755434977f"
4 }
5
6
7 variable "instance_type"{
8     type = string
9     default= "t2.micro"
10 }
11
12
13 variable "iam_users"{
14     type = list(string)
15     default = ["user1", "user2", "user3"]
16 }
```

Step 4: Now initializes

```
F:\SEM 6\SPCM_LAB\SPCM_LAB_TERRAFORM>terraform init

Initializing the backend...

Initializing provider plugins...
- Reusing previous version of hashicorp/aws from the dependency lock file
- Using previously-installed hashicorp/aws v5.31.0

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
```

Step 5: Now perform validate

```
F:\SEM 6\SPCM_LAB\SPCM_LAB_TERRAFORM>terraform validate
Success! The configuration is valid.
```

Step 6: Now perform the terraform apply

```
F:\SEM 6\SPCM_LAB\SPCM_LAB_TERRAFORM>terraform validate
Success! The configuration is valid.

F:\SEM 6\SPCM_LAB\SPCM_LAB_TERRAFORM>terraform apply

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the
following symbols:
+ create



Terraform will perform the following actions:

# aws_iam_user.iam_user[0] will be created
+ resource "aws_iam_user" "iam_user" {
+   arn              = (known after apply)
+   force_destroy    = false
+   id               = (known after apply)
+   name             = "user1"
+   path             = "/"
+   tags             = {
+     "Name" = "user1-user"
+   }
+   tags_all         = {
+     "Name" = "user1-user"
+   }
+   unique_id        = (known after apply)
+ }

# aws_iam_user.iam_user[1] will be created
+ resource "aws_iam_user" "iam_user" {
+   arn              = (known after apply)
+   force_destroy    = false
+   id               = (known after apply)
+   name             = "user2"
+   path             = "/"
+   tags             = {
+     "Name" = "user2-user"
+   }
+   tags_all         = {
+     "Name" = "user2-user"
+   }
+   unique_id        = (known after apply)
+ }

# aws_iam_user.iam_user[2] will be created
+ resource "aws_iam_user" "iam_user" {
+   arn              = (known after apply)
+   force_destroy    = false
+   id               = (known after apply)
+   name             = "user3"
+   path             = "/"
+   tags             = {
+     "Name" = "user3-user"
+   }
+   tags_all         = {
+     "Name" = "user3-user"
+   }
+   unique_id        = (known after apply)
+ }

# aws_instance.My-instance will be created
+ resource "aws_instance" "My-instance" {
```

Instances (1) Info							Connect	Instance state ▼	Actions ▼	Launch instances ▼
<input type="text" value="Find Instance by attribute or tag (case-sensitive)"/>							Any state ▼		<input type="button" value="1"/> <input type="button" value="⚙️"/>	
<input type="checkbox"/>	Name ↗	Instance ID	Instance state ▼	Instance type ▼	Status check	Alarm status	Availability Zone ▼	P		
<input type="checkbox"/>	UPES-EC2-Inst...	i-0d7b168226bb58756	Running  	t2.micro	⌚ Initializing	View alarms +	ap-south-1a	e		

Step 7: Now perform Terraform destroy

```
F:\SEM 6\SPCM_LAB\SPCM_LAB_TERRAFORM>terraform destroy
aws_iam_user.iam_user[1]: Refreshing state... [id=user2]
aws_iam_user.iam_user[0]: Refreshing state... [id=user1]
aws_iam_user.iam_user[2]: Refreshing state... [id=user3]
aws_instance.My-instance: Refreshing state... [id=i-0d7b168226bb58756]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
destroy

Terraform will perform the following actions:

# aws_iam_user.iam_user[0] will be destroyed
resource "aws_iam_user" "iam_user" {
-   arn              = "arn:aws:iam:637423348862:user/user1" -> null
-   force_destroy    = false -> null
-   id               = "user1" -> null
-   name             = "user1" -> null
-   path             = "/" -> null
-   tags             = {
-     "Name" = "user1-user"
-   } -> null
-   tags_all         = {
-     "Name" = "user1-user"
-   } -> null
-   unique_id        = "AIDA212LENFPPIV0H5EHU" -> null
- }

# aws_iam_user.iam_user[1] will be destroyed
resource "aws_iam_user" "iam_user" {
-   arn              = "arn:aws:iam:637423348862:user/user2" -> null
-   force_destroy    = false -> null
-   id               = "user2" -> null
-   name             = "user2" -> null
-   path             = "/" -> null
-   tags             = {
-     "Name" = "user2-user"
-   } -> null
-   tags_all         = {
-     "Name" = "user2-user"
-   } -> null
-   unique_id        = "AIDA212LENFPPIV0H5EHU" -> null
- }

# aws_iam_user.iam_user[2] will be destroyed
resource "aws_iam_user" "iam_user" {
-   arn              = "arn:aws:iam:637423348862:user/user3" -> null
-   force_destroy    = false -> null
-   id               = "user3" -> null
-   name             = "user3" -> null
-   path             = "/" -> null
-   tags             = {
-     "Name" = "user3-user"
-   } -> null
-   tags_all         = {
-     "Name" = "user3-user"
-   } -> null
-   unique_id        = "AIDA212LENFPPIV0H5EHU" -> null
- }

# aws_instance.My-instance will be destroyed
resource "aws_instance" "My-instance" {
-   ami              = "ami-91f48785d34977f" -> null
-   arn              = "arn:aws:ec2:ap-south-1:637423348862:instance/i-0d7b168226bb58756" -> null
- }
```

```

    get_password_data      = false -> null
    hibernation            = false -> null
    id                    = "i-0d7b168226bb58756" -> null
    instance_initiated_shutdown_behavior = "stop" -> null
    instance_state         = "running" -> null
    instance_type          = "t2.micro" -> null
    ipv6_address_count     = 0 -> null
    ipv6_addresses         = [] -> null
    monitoring             = false -> null
    placement_partition_number = 0 -> null
    primary_network_interface_id = "eni-dal13d5d0dce7f88c" -> null
    private_dns            = "ip-172-31-37-220.ap-south-1.compute.internal" -> null
    private_ip             = "172.31.37.220" -> null
    public_dns             = "ec2-43-205-130-157.ap-south-1.compute.amazonaws.com" -> null
    public_ip              = "43.205.230.157" -> null
    secondary_private_ips  = [] -> null
    security_groups        = [
      "default",
    ] -> null
    source_dest_check      = true -> null
    subnet_id              = "subnet-0fb95688aa188f7d" -> null
    tags                   = {
      "Name" = "UPES-EC2-Instnace"
    } -> null
    tags_all              = {
      "Name" = "UPES-EC2-Instnace"
    } -> null
    tenancy                = "default" -> null
    user_data_replace_on_change = false -> null
    vpc_security_group_ids = [
      "sg-0c6b8aaad18c53ba2",
    ] -> null

    capacity_reservation_specification {
      capacity_reservation_preference = "open" -> null
    }

    cpu_options {
      core_count      = 1 -> null
      threads_per_core = 1 -> null
    }

    credit_specification {
      cpu_credits = "standard" -> null
    }

    enclave_options {
      enabled = false -> null
    }

    maintenance_options {
      auto_recovery = "default" -> null
    }

    metadata_options {
      http_endpoint      = "enabled" -> null
      http_protocol_ipv6 = "disabled" -> null
      http_put_response_hop_limit = 1 -> null
      http_tokens        = "optional" -> null
      instance_metadata_tags = "disabled" -> null
    }

    private_dns_name_options {
      enable_resource_name_dns_a_record = false -> null
    }
  }

  root_block_device {
    delete_on_termination = true -> null
    device_name           = "/dev/sda1" -> null
    encrypted             = false -> null
    iops                  = 100 -> null
    tags                  = [] -> null
    throughput            = 0 -> null
    volume_id             = "vol-05fdb35ff14989557" -> null
    volume_size           = 8 -> null
    volume_type           = "gp2" -> null
  }
}

```

```

}

- credit_specification {
  - cpu_credits = "standard" -> null
}

- enclave_options {
  - enabled = false -> null
}

- maintenance_options {
  - auto_recovery = "default" -> null
}

- metadata_options {
  - http_endpoint      = "enabled" -> null
  - http_protocol_ipv6 = "disabled" -> null
  - http_put_response_hop_limit = 1 -> null
  - http_tokens        = "optional" -> null
  - instance_metadata_tags = "disabled" -> null
}

- private_dns_name_options {
  - enable_resource_name_dns_a_record = false -> null
  - enable_resource_name_dns_aaaa_record = false -> null
  - hostname_type = "ip-name" -> null
}

- root_block_device {
  - delete_on_termination = true -> null
  - device_name           = "/dev/sda1" -> null
  - encrypted             = false -> null
  - iops                  = 100 -> null
  - tags                  = [] -> null
  - throughput            = 0 -> null
  - volume_id             = "vol-05fdb35ff14989557" -> null
  - volume_size           = 8 -> null
  - volume_type           = "gp2" -> null
}
}

Plan: 0 to add, 0 to change, 4 to destroy.

Do you really want to destroy all resources?
Terraform will destroy all your managed infrastructure, as shown above.
There is no undo. Only 'yes' will be accepted to confirm.

Enter a value: yes

aws_iam_user.iam_user[0]: Destroying... [id=user1]
aws_iam_user.iam_user[1]: Destroying... [id=user2]
aws_iam_user.iam_user[2]: Destroying... [id=user3]
aws_instance.My-instance: Destroying... [id=i-0d7b168226bb58756]
aws_iam_user.iam_user[0]: Destruction complete after 2s
aws_iam_user.iam_user[1]: Destruction complete after 2s
aws_iam_user.iam_user[2]: Destruction complete after 2s
aws_instance.My-instance: Still destroying... [id=i-0d7b168226bb58756, 10s elapsed]
aws_instance.My-instance: Still destroying... [id=i-0d7b168226bb58756, 20s elapsed]
aws_instance.My-instance: Still destroying... [id=i-0d7b168226bb58756, 30s elapsed]
aws_instance.My-instance: Destruction complete after 31s

Destroy complete! Resources: 4 destroyed.

```

Instances (1) info							
Find Instance by attribute or tag (case-sensitive)				Any state			
<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
<input type="checkbox"/>	UPES-EC2-Inst...	i-0d7b168226bb58756	Terminated	t2.micro	-	View alarms	ap-south-1a